Nordic/Baltic Regional ESTH Hub e-Letter

Welcome to the latest e-Letter, our *unclassified* electronic publication sharing regional information, news and events. We encourage you to visit the websites of our Embassies throughout the Hub. Feel free to disseminate to your contacts. At the very end of the e-Letter you will find our featured story, offering background on hydropower.

Enjoy the read!
Ed Canuel
Bo Gregersen
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Kelley Hamrick

AROUND THE REGION…..

DENMARK

Greenland Ice Core Analysis May Provide Glimpse into Climate's Future. A new study analyzing the Earth's climate from more than 100,000 years ago indicates that our ancient climate was warmer than previously thought. The past melting of the Antarctic ice sheet may have contributed more to sea level rise than melting of the Greenland ice sheet. Read more **here**.

Greenland Research Station to Monitor Climate Change. Aarhus University has begun the construction of a modern research station in northern Greenland that will monitor the regional impact of climate change. The new station is expected to be finished by 2015. Read more **here.** *(Picture: www.cphpost.dk)*

Maersk Line Reaches 2020 CO_2 Target. The world's largest container shipping company, Maersk Line, has reached its 2020 target of reducing CO_2 emissions by 25%. According to Chief Operating Officer Morten Engelstoft, Maersk is raising the target to a 40% CO_2 reduction by 2020 in order to maintain momentum. Read more **here**.

Mayor of Copenhagen Visited U.S. to Present Green Danish Solutions. The Mayor of Copenhagen Frank Jensen presented Copenhagen's development strategy in a visit to San Francisco and New York City. The Mayor's agenda included green solutions and sustainable urban development. Frank Jensen also met with U.S. green technology and innovation companies and presented Copenhagen's plan to become the world's first carbon-neutral capital by 2025. Read more **here**.

ESTONIA

Public Transport Now Free for All Residents. Following a public referendum held in the Estonian capital, Tallinn became the first capital in the EU to provide free public transport to its residents in

January 2013. The initiative is part of Mayor Edgar Savisaar's efforts to make Tallinn Europe's greenest city by 2018. Read more **here**.

Electric Cars: 15 Minutes Charging, 200 km Driving? ABB, KredEx and Estonia's Ministry of Economic Affairs have deployed direct current (DC) chargers throughout Estonia to build up electric car infrastructure. Currently 75 chargers are operational, while another 165 fast charging stations will be installed in early 2013. The Estonian Electromobility Program "ELMO" aims to deploy a nationwide fast changing network. Read more **here**.

FINLAND

Groundbreaking Clean Tech Ship – Using U.S. Products and Technology. The M/S Viking Grace is the first large passenger ship in the world running on LNG, significantly reducing greenhouse gas emissions. Additionally all the lighting onboard employs light-emitting diode (LED) technology. U.S.-based products and technologies include the navigation equipment and integrated automation system, provided by L3 Communications. The security system, fire alarm and UPS systems are supplied by United Technologies Corporation and Eaton Power Quality Ltd. Read more **here**. *(Picture: Ambassador Oreck shows U.S.-manufactured (L3) navigation equipment onboard the Viking Grace.)*

Cuycha takes its carbon neutralization method to Australia and UK. Cuycha Innovation, which has developed a method for neutralizing carbon dioxide, has established new joint ventures in Australia and the UK. Construction has begun on the first neutralization plant in connection with a waste combustion plant in South Africa. Cuycha expects joint-venture companies in China and the U.S. will start-up within the next year and a half. Read more **here**.

Emotion-sensing robot being developed in Finland. The robot of the future is currently being developed at the University of Oulu. The robot will be able to recognize human expressions and understand speech/gestures. Additionally, the robot can be taught to recognize humans and to remember previous interactive situations. The robot will also be able to respond via an avatar on its screen. Read more **here**. *(Picture: www.goodnewsfinland.com)*

GERMANY

The Timber Wind Turbine Tower. German company TimberTower GmbH has constructed the first 100m wooden tower for a 1.5 megawatt wind turbine in Hannover that will produce electricity for about 1000 households. The company says its solution meets all current requirements for insurance,

certification and fire protection regulations and guarantees a minimum serviceable life of 20 years. All materials used in the tower can be recycled. Read more **here**. (*Picture: www.gizmag.com*)

Max Planck Opens First Institute in Florida. The Max Planck Florida Institute for Neuroscience (MPFI) opened on December 5, 2012 in Juniper, Florida. The MPFI is the first institute of the German-based Max Planck Society established outside of Europe. Focusing on neuroscience research, the Institute is expected to create 1,800 jobs and bring more than USD 2 billion into the U.S. economy. Read more **here**.

The Ball Tells You When It's In. Future soccer games are likely to be played with goal-line technology which can tell the referee whether the ball is in or not. The technology is developed in collaboration between the national German research organization Fraunhofer and the Danish company GoalRef and has been approved by FIFA to be used at the 2014 World Cup. Read more **here**.

ICELAND

Iceland's Geogreenhouse to Export Tomatoes. Icelandic company Geogreenhouse is planning to start exporting tomatoes to the UK. Geogreenhouse will soon start construction of a 5 hectare (12.4 acre) greenhouse. The greenhouse will be based in the vicinity of a geothermal power plant which will provide heat and electricity. Read more **here**. *(Picture: www.icelandreview.com)*

Alaska Delegation Visits Iceland. The U.S. Embassy in Reykjavik supported a 30-person delegation from Alaska composed of legislators, researchers, government and business leaders on a policy tour to explore Iceland's geothermal and hydropower development. Read more **here**.

Iceland Glaciers Retreat for 17th Consecutive Year. Glaciers in Iceland retreated again in 2012, the 17th year in a row. Measurements of glaciers have been carried out in Iceland for around 80 years. Some glaciers have thinned so much that they are now close to the minimum size needed to be defined as a glacier. Read more **here**.

International Geothermal Conference in Reykjavik. The U.S. Embassy in Reykjavik is hosting DOE Senior Engineer Jay Nathwani to participate in the International Geothermal Conference in March. The Embassy is also working closely with organizers to attract U.S. private sector participation. Iceland's President Olafur Ragnar Grimsson and Foreign Minister Ossur Skarphedinsson will be keynote speakers. Read more **here**.

LATVIA

Court Allows Latvian Cyber-Thief Extradition to the United States. The Latvian Supreme Court ruled that Riga resident Deniss Calowskis, one of three alleged cyber-thieves, be extradited to the U.S. for prosecution. They are accused of stealing banking information from computers across Europe and the United States. Read more **here.**

Latvia's Hydropower Plants Produce 28% More Electricity in 2012. Latvia's large and small hydropower plants put out a total of 3700 gigawatt/hours (GWh) of electricity in 2012, which is 28% more than 2011. Wind farms' output totaled 108 GWh, a 52% increase. Read more **here**. (*Picture: www.baltic-course.com*)

LITHUANIA

NASA Looks Forward to Cooperation with Lithuania; U.S. Chargé d' Affaires. In an interview with the Lithuanian Tribune, U.S. Chargé d' Affaires Anne Hall states that NASA is working on a framework agreement similar to that with Israel, South Korea and Denmark. The agreement will enable Lithuania to cooperate with NASA regarding technology usage and provide Lithuanian students with the opportunity to conduct research in the U.S. Read more **here**.

Poachers Will Pay Ten Times More. In January 2013, the Minister of Environment Valentinas Mazuronis signed a decree by which penalties for illegally hunted animals will increase tenfold. For example, fines for an illegally hunted moose or a deer have increased from 1750 to 17500 litas ($686 to $6860). In addition to the increased penalties, Minister Mazuronis argues that the poachers' tools such as nets, rifles, boats and even off-road vehicles must be confiscated. Read more **here**.

Change Management Policy to be Implemented under Approved Strategy for Climate Change. In November 2012, the Lithuanian Parliament approved the National Strategy for Climate Change Management Policy for 2013-2050. The strategies' objectives are to ensure that the pace of the nation's economic growth is faster than the increase of greenhouse gas (GHG) emissions, to shift to a low-carbon economy, to improve energy production efficiency and to use renewable energy sources in all economy sectors. Read more here.

NORWAY

Hammerfest LNG set sails for Japan via Arctic route. The first-ever tanker loaded with liquid natural gas (LNG) sailed the Northern Sea Route (NSR) with gas from Norway to Japan. The route can save ships up to 20 days from the Hammerfest plant to Japan. The LNG-tanker was escorted by Russian nuclear powered icebreakers for most of the route along the

north coast of Siberia. Read more **here**.

46 vessels through Northern Sea Route. Never before have so many vessels taken the Arctic shortcut between Europe and Asia, and never before has so much cargo been transported along the route. There has been a tenfold increase in the number of vessels using NSR during the last two years. In 2012, 46 vessels have sailed the route, compared to 34 in 2011 and only four in 2010. Read more **here**. *(Picture: www.barentsobserver.com)*

POLAND

Poland Sees Record Growth in Wind Energy. Poland installed a record amount of new wind energy capacity in 2012. The installed capacity of on-shore wind production increased about 800 MW to about 2,400 MW. Analysts expect the rapid growth in Poland's renewable energy to slow in the coming year due to regulatory uncertainty. Read more **here**. *(Picture: www.euractiv.com)*

Polish Utility Grants Nuclear Site Characterization Tender. PGE EJ1, the state-owned utility branch tasked with building Poland's first nuclear plant by 2025, awarded the $81.5 million contract to conduct site characterization to a consortium of companies based in the United States and Bulgaria. The task includes two years of site and environmental studies at three potential locations for the planned 3,000 MW nuclear power plant. PGE EJ1 executives said the tender is an important step in realizing Poland's plans to develop a civilian nuclear power program and diversify the country's energy mix. Read more **here**.

RUSSIA

Heaviest Snowfall in a Century Hits Moscow. More snow hit Moscow this winter than at any time in the past 100 years. Over 85 inches of snow fell this year, compared to an average 60 inches of snowfall most years. As the snow season continues through mid-April, an increased total snowfall is likely. Director of the WWF Russia Climate and Energy program Alexi Kokorin commented that there will be much stronger, intensive bursts of precipitation in the future.

Rusnano Chief Chubais Joins U.S. Tri Alpha Energy Board. Russia's State Nanotechnology Corporation (Rusnano) head Anatoly Chubais joined the board of directors of U.S.-based Tri Alpha Energy. Based in California, Tri Alpha Energy is a venture capital-backed nuclear energy company that develops plasma fusion technologies and has applications in energy generation and nuclear waste management.

SWEDEN

The Nordic Greening of Stanford. Stanford University engaged the Swedish company Alfa Laval to upgrade the university's heating system. Most of the university is currently heated with steam. District

heating represents a more sustainable solution, common in the Nordics. The project, scheduled to finish in 2015, will widen Alfa Laval's presence in the U.S. market. Read more **here**.

Facebook's New Data Center in the 'Node Pole'. Internet giant Facebook places its European data center in the small Swedish city of Lulea only 60 miles from the Arctic. The small town of 74,000 inhabitants has Europe's cheapest electricity prices because of its abundant hydroelectric power resources. The average annual temperature of 1.3 degrees Celsius (34.3 degrees Fahrenheit) is ideal for cooling the servers with outside air instead of electricity. Read more **here**. (*Picture: www.theepochtimes.com*)

Chalmers and UC Berkley Team Up on Solar Energy. Researchers at Chalmers University and UC Berkley have developed a system which can store solar energy in chemical bonds. The system is based on a synthetic molecule that is changed by sunlight. The molecule can be transported and stored for several years and then used to generate heat on demand. Read more **here**.

EUROPEAN UNION

Offshore Wind Energy Sector Posts Solid 2012. In 2012, 293 turbines were installed across Belgium, the UK, Denmark and Germany. They represent 1,165 Megawatts (MW), an increase of 33% compared to 2011 installations. This brings total offshore wind energy capacity to 4,995 MW. Overall, the UK remains the leader with nearly 60% of Europe's total offshore capacity, followed by Denmark (18%), Belgium (8%) and Germany (6%). Read more **here**. *(Picture: www.ewea.org)*

EU Pledges Expansion of Infrastructure for Electric Vehicles. The EU pledged to expand the infrastructure for electric vehicles by multiplying the number of Europe's charging stations in an effort to kickstart Europe's low-carbon automotive industry. The USD 13.4bn plan is intended to break the "vicious circle," in which lack of infrastructure prevents low-carbon vehicles sales. Read more **here**.

EU Hails Global Deal on Cutting Mercury Emissions. The European Commission hailed a UN agreement establishing the first global treaty to cut mercury pollution. The goal is to phase out many products that use the toxic liquid metal such as batteries, thermometers and some fluorescent lights. This will happen through the banning of global import and exports by 2020. Read more **here**.

UNITED STATES

Landsat 8 to the Rescue: NASA Launches Satellite. On February 11th, NASA launched its highly-anticipated Landsat 8 satellite. Part of a continuously running series since 1972, the Landsat satellites

provide free land-cover and land-use change images to the scientific community. The new Landsat 8 provides higher resolutions and greater wavelength bandwidth than its predecessors. Read more **here**.

New York City To Test Liquefied Natural Gas On Staten Island Ferry Vessel. In a bid to cut fuel costs, New York City will retrofit one of the vessels in its Staten Island Ferry fleet to see how it runs on LNG. City officials estimate that a switch from diesel to LNG could annually save USD 3 million per boat, while reducing CO2-emissions by 25%. Read more **here**. *(Picture: www.newyork.cbslocal.com)*

Rockwool is Turning the Empire State Building into an Eco-friendly Landmark. The iconic Empire State building in New York City is undergoing a $550 million renovation. Built in the 1930s, it is a major tourist attraction with an estimated 4 million visitors a year. The Rockwool Group, headquartered in Denmark, is involved in making the building more environmentally-friendly and more fire-resistant. Read more **here**.

Inaugural and State of the Union Addresses Give Climate Goals Center Stage. President Obama made addressing climate change the most prominent policy vow of his second Inaugural Address. The White House plans to focus on what it can do administratively to reduce emissions from power plants, to increase the efficiency of home appliances and to have the federal government itself produce less carbon pollution. In the following State of the Union address, President Obama reiterated these priorities and warned Congress against the failure to act. See full Inaugural Address transcript **here**. See full State of the Union Address **here**.

EPA Announces Next Round of Clean Air Standards to Reduce Harmful Soot Pollution. The new standards from the Environmental Protection Agency (EPA) will reduce the amount of soot released from power plants, diesel engines, refineries and other industries. Former EPA Administrator Lisa P. Jackson noted that the new standards will result in health savings of between USD 4bn and USD 9bn, while costing up to USD 350m to implement. Read more **here**. (*Picture: www.mnn.com*)

EVENTS

Iceland Geothermal Conference
Reykjavik, Iceland. March, 5, 2013 – March 8, 2013.

Artek: Sustainability in mining in the Arctic
Sisimuit, Greenland. April 9, 2013 – April, 11, 2013.

2013 Arctic Science Summit Week; The Arctic Hub-Regional and Global Perspectives
Krakow, Poland. April 14, 2013 – April 20, 2013

Conference on Best Environmental Practices in the Mining Sector in the Barents Region
Rovaniemi, Finland. April 23, 2013 – April, 25, 2013

Arctic Council Ministerial meeting
Kiruna, Sweden. May 15, 2013

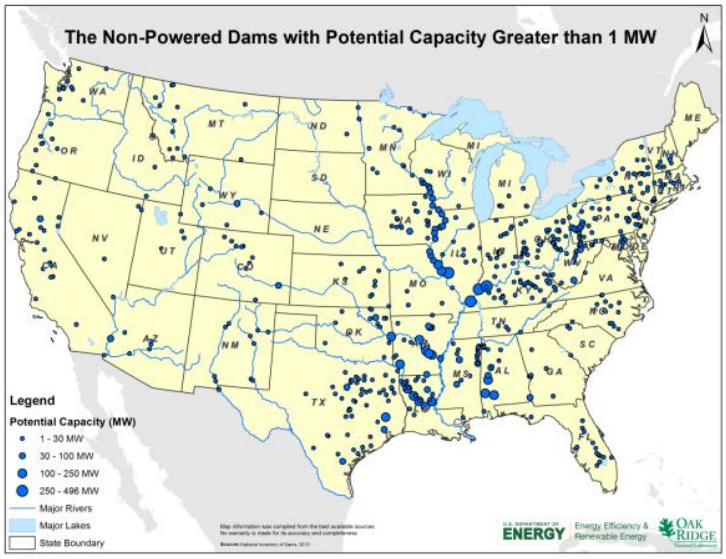
Energy Europe 2013
Copenhagen, Denmark. May 23, 2013 – May 25, 2013

FEATURED STORY

Hydropower

What is hydropower?

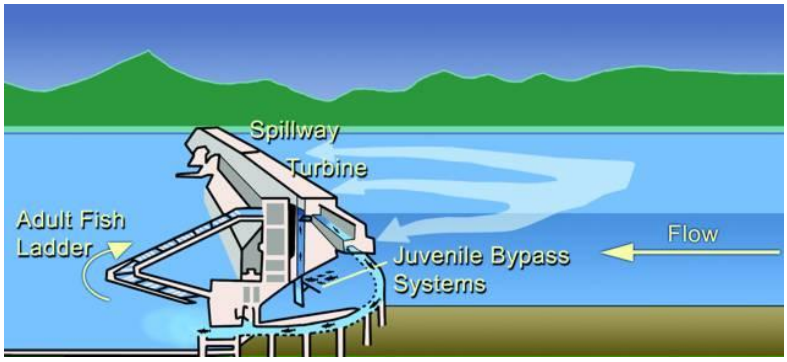
Hydropower, one of the world's oldest forms of renewable energy, harnesses energy from the falling or flowing of water. When evaluating a site for hydropower potential, key factors include both the drop in height and amount of water. If either of these factors increases, so too will the amount of electricity generated. Though currently the largest source of renewable energy in the U.S. (contributing 8.2% of total electricity generation), an estimated 400,000 MW of U.S. hydropower potential remains untapped. (*Picture: http://nhaap.ornl.gov*)



Positive and Negative Aspects of Hydropower

The global amount of electricity produced from hydropower far exceeds that of other renewable energy sources. Currently, hydropower comprises 63% of the total renewable energy generated in the U.S., and accounts for an even greater 85% worldwide. This success can be attributed to its flexibility, as hydroelectric plants can readily adjust production based on a changing demand.

Most large-scale plants are able to produce electricity for less than 5 cents per kilowatt-hour. The financial burden for hydropower comes from the construction phase, which can cost anywhere from USD 400m to 400bn depending on the size of the plant. New hydroelectric plants have high start-up costs – consequently, very few are currently being constructed in the U.S. In an effort to address this scarcity, the U.S. House of Representatives approved a new bill on February 13th to reduce some of the regulatory barriers restricting the construction of new dams. The Hydropower Regulatory Efficiency Act of 2013 aims to facilitate the construction of small hydropower plants (10 MW or less) by reducing federal delays and permitting times, as well as by granting exemptions in licensing requirements. The bill now faces a vote by the Senate.



In addition to low production costs, hydropower is also lauded for emitting few air pollutants, green house gases or waste products. Yet hydroelectric plants are not 100% environmentally-friendly. They often face criticism for their negative effects on local ecosystems and habitats. Most environmental impacts occur during the construction phase, though plant operations may also create negative consequences. Innovations to reduce such impacts include "fish ladders," which help fish by-pass dams. (*Picture: www.nwcouncil.org*)

Hydroelectricity production

There are several methods for converting hydropower into hydroelectricity:

Conventional Dam: The most common hydropower plants are built into dams. Dams form a reservoir of water that captures the water's potential energy. The plant then converts this energy by letting water spin a turbine, which activates a generator to produce electricity. Only about 3% percent of the 80,000 U.S. dams have hydropower capabilities; strict site requirements for power production are a significant limiting factor. (*Picture: www.eere.energy.gov*)

Pumped Storage: Two reservoirs are needed in a pumped storage plant. These storage areas are located at two different elevations. During non-peak hours (hours where electricity is in low demand and therefore relatively cheap) water is pumped from the lower reservoir into the higher reservoir. Then, during peak consumption hours, the process is reversed and electricity is produced. The amount of energy needed to pump the water uphill is greater than the amount of energy produced, but the financial gain from selling the electricity during peak hours exceeds the cost of pumping during non-peak hours.

Run-of-the-River: This type of hydroelectric power plant is positioned on a river, relying on the river's flow to spin the electricity generating turbine. There is often no reservoir and the water level, to either side of the plant, remains constant.

Hydropower in the Region

Norway and Iceland are world leaders in hydroelectricity production. Hydroelectric power plants generate 75.5% of the total electricity in Iceland and 95.3% of the total electricity in Norway. While nearby countries use less hydroelectricity, several have plans to increase hydroelectric production. In 2012, the Swedish consulting agency Sweco was chosen to assist with the modernization of two of Latvia's largest hydroelectric power plants.

Further Reading:

Hydropower information: http://www.hydro.org/

U.S. Government and Hydropower: http://www.eia.gov

Global hydropower use: http://www.worldwatch.org/node/9527

EU Support for Hydropower:
http://ec.europa.eu/research/energy/eu/research/hydropower/support/index_en.htm

To follow developments on the Hydropower Regulatory Efficiency Act:
http://www.govtrack.us/congress/votes/113-2013/h40